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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/583,735	08/04/2006	Mohamed Takhim	66345-040-7	8372

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EXAMINER

COHEN, STEFANIE J

ART UNIT	PAPER NUMBER
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1793

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/583,735	Applicant(s) TAKHIM, MOHAMED	
	Examiner STEFANIE COHEN	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-20 is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 19, 2-4, 6-11, 13-14, 16-17 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walter (DE-A1667575) (see pg 1 of specification) in view of MacDonald (3868243).

Walter, teaches a method for preparing strong base phosphates, comprising:

- a) forming a pulp consisting of an aqueous phase, which contains water-soluble calcium phosphate in the form of calcium ions and phosphate ions, and a solid phase which contains impurities,
- b) separating said liquid phase and said solid phase, in the liquid phase resulting from said separation,
- c) displacing the calcium ions by ions of a strong base which results in formation of an aqueous solution of phosphate(s) of said strong base and precipitation of a water-insoluble calcium phosphate, and
- d) isolating the precipitated calcium phosphate from the aqueous solution of strong base phosphate(s).

This method requires ore etching using an excess of concentrated phosphoric acid under conditions for crystallizing the calcium dihydrogen phosphate (MCP) and

Art Unit: 1793

dissolving the impurities in the liquid phase, then redissolving the MCP crystals, which makes it a complex and expensive method.

Although Walter teaches a method of preparing strong base phosphates, Walter does not teach the starting components to form the pulp solution.

MacDonald, claim 3, teaches a method of making granular triple superphosphate by forming a flowable slurry by reacting phosphate rock and phosphoric acid in a reactor.

It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute a slurry formed by reacting phosphate rock and phosphoric acid in as taught by MacDonald in for step a) as taught by Walter because MacDonald, col. 2 lines 35-55, teaches this mixture forms a stable fluid slurry.

Further, the liquid slurry is formed by reacting from about 15% to about 60% of the total rock quantity which would be required for production of ultimate superphosphate to form a stable fluid medium.

Further, although MacDonald teaches the final product to be a granular TSP fertilizer, it would have been obvious to one of ordinary skill in the art at the time of the invention that the slurry as taught by MacDonald could be used in the method as taught by Walter to obtain specific characteristics of the final product.

Regarding claim 2, MacDonald, col. 2 lines 55-60, teaches since no water is added to the reaction product, very little, if any, further processing or drying is required

Art Unit: 1793

to reduce the moisture content to the required 3 to 5% and the reaction product is sufficiently dry.

Regarding claim 3, although MacDonald, col. 3 lines 25-30, teaches phosphoric acid having a concentration in the range of about 45-55% P₂O₅, MacDonald, col. 2 lines 23-26, teaches in a Doff-Oliver process, if the quantity of phosphate rock to be converted into slurry is of the order of 212 parts per weight, the phosphoric acid of 38% P₂O₅ required is of the order of 202 parts P₂O₅ and 252 parts water, totaling 743 parts by weight of slurry.

Regarding claims 4 and 13-14, it would have been obvious to one of ordinary skill in the art at the time of the invention that the pH would be dependent amount of phosphoric acid and phosphoric rock used in the slurry.

Further, Walter, example 2, teaches a pH of 2.65 in the pulp forming step.

Regarding claim 6, it would have been obvious to one of ordinary skill in the art at the time of the invention for the method to take place at room temperature so no external heating or pressure equipment is needed.

Regarding claim 7, Walter, example 2, teaches using NaOH as a strong base.

Regarding claim 8, the Walter in view of MacDonald method is the same method as taught in the specification and therefore it would be expected that MCP and DCP would form.

Regarding claim 9, Walter, example 2, teaches the solution was filtered and the clear filtrate had a pH of 4.7.

Art Unit: 1793

Regarding claims 10 and 18, it would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the Na/P ratio to ensure there is a sufficient amount of NaOH to fully precipitate the DCP.

Regarding claim 11, it would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the molar ratio of sodium monohydrogen phosphate and sodium dihydrogen phosphate to obtain a specific amount of the final product.

Regarding claims 16 and 17, it would have been obvious to one of ordinary skill in the art at the time of the invention that the pH would increase if more of strong base was present in the slurry.

Walter, example 2, teaches the solution was filtered and the clear filtrate had a pH of 4.7.

Further, Walter teaches the pH of the remaining solution can be further increased to aid in the precipitation by adding a basically reacting ammonium.

Regarding claim 20, although MacDonald, col. 3 lines 25-30, teaches phosphoric acid having a concentration in the range of about 45-55% P2O5, MacDonald, col. 2 lines 23-26, teaches in a Dorr-Oliver process, if the quantity of phosphate rock to be converted into slurry is of the order of 212 parts per weight, the phosphoric acid of 38% P.sub.2O.sub.5 required is of the order of 202 parts P.sub.2O.sub.5 and 252 parts water, totaling 743 parts by weight of slurry.

Art Unit: 1793

Claims 5 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walter (DE-A1667575) (see pg 1 of specification) in view of MacDonald (3868243) as applied to claim 19 and further in view of Wesenberg (1986).

Although Walter and MacDonald teach a method to produce strong base phosphates, neither teaches a molar ratio of Ca/P in the pulp of step b).

Wessenburg teaches the theoretical value of the ratio of P2O5 to CaO is 2.53.

Therefore, the ratio of Ca/P is .4.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the theoretical value of .4 as taught by Wessenburg, to obtain theoretical and ideal characteristics of the slurry.

Further, it would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the Ca/P ratio to obtain a specific degree of conversion.

Regarding claim 15, it would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the Ca/P ratio to obtain a specific degree of conversion.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Walter (DE-A1667575) (see pg 1 of specification) in view of MacDonald (3868243) as applied

Art Unit: 1793

to claim 19 and further in view of Smith et al (4235854).

Although Walter and MacDonald teach a method to produce strong base phosphates, neither teaches a specific type of phosphoric acid.

Smith, col. 1 lines 14-22, teaches the bulk of phosphoric acid is produced by the so called wet process method which results in a concentrated acid solution ranging from 22-50 percent phosphate.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the wet processed phosphoric acid in the Walter in view of MacDonald method because the wet processed phosphoric acid is a conventional way to produce a specific concentration of phosphoric acid.

Response to Arguments

Applicant argues Walter teaches a purification wherein the rock is mixed with concentrated phosphoric acid and the obtained slurry is cooled, filtered and washed with concentrated phosphoric acid. . The major part of the impurities are dissolved during this treatment which results in a solid phase of pure MCP crystals and a filtrate constituted of phosphoric acid that contains the major part of the impurities as well as calcium ions. This preliminary step is clearly done for purification purposes, in order to remove impurities originating from the rock. The Walter process needs a purified

Art Unit: 1793

phosphate source as raw material for the second step of the process. Applicant argues this is a different process than the one as taught in the instant claims.

Examiner respectfully traverses.

Walter teaches it is not absolutely necessary to follow the path of crystallization of the calcium dihydrogen phosphates. Rather, for example, one can also directly further process the solution yielded during the digestion of the tricalcium phosphate containing material which contains soluble impurities in a considerable amount. These impurities are essentially precipitated in the first method stage with the calcium monohydrogen phosphate crystals.

Therefore, the crystallization step of calcium dihydrogen phosphates are optional. When eliminating this step, a pasty triple superphosphate composition can be used in the Walter method. Instead of the formation of the MCP crystals which is then mixed with water, a solution of rock and phosphoric acid is mixed and then combined with water to form TSP.

Further, the applicant argues the examiner asserts that there would be no reason to combine Walter with MacDonald.

Examiner respectfully traverses.

Further, Walter teaches the impure calcium monohydrogen phosphate crystals precipitated in the first method stage, can be used directly as fertilizers, for which a high purity is not required.

MacDonald teaches a method of making granular triple superphosphate fertilizer. Therefore, both calcium monohydrogen phosphate crystals precipitated in the first

Art Unit: 1793

method stage and the TSP as stated in the instant claim can both be used as fertilizers and therefore there is motivation to combine the references.

Regarding the arguments for claims 5 and 15, more evidence is needed to explain why neither Wesenburg nor Smith can overcome the basic deficiencies in the combination of Walter and MacDonald.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to STEFANIE COHEN whose telephone number is (571)270-5836. The examiner can normally be reached on Monday through Thursday 9:3am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Melvin Curtis Mayes can be reached on 5712721234. The fax phone

Art Unit: 1793

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Stefanie Cohen

1/12/2009

SC

January 16, 2010

/Melvin Curtis Mayes/
Supervisory Patent Examiner, Art Unit 1793